

Fecal Impaction Following Methadone Ingestion Simulating Acute Intestinal Obstruction

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A hitherto unreported clinical entity, namely fecal impaction following methadone ingestion simulating acute intestinal obstruction, is described. Five cases admitted to the Surgical Service of the Beth Israel Medical Center in New York City are discussed. The nature and pathogenesis of the obstruction are analyzed and a suggested method of managing these cases is presented. It is emphasized that with expansion and increasing acceptance of Methadone Maintenance Treatment Programs, the number of such cases will increase. It is thus important that physicians become aware of the existence of this syndrome since involvement in methadone maintenance may be a life-long commitment for persons involved, thus increasing the incidence of the complication. It is also imperative to avoid unnecessary, and possibly harmful surgical intervention in such cases.

HEROIN ADDICTION has reached alarming proportions, particularly in the large metropolitan areas. In New York City alone, it is estimated that there are 150,000 addicts.¹⁵ In the past, efforts to rehabilitate heroin addicts have met with dismal results. At Beth Israel Medical Center in New York City, methadone therapy was introduced for this purpose in 1964 by Dole and Nyswander and has been shown to be highly effective.^{3,4,7} Although it substitutes one addiction for another, authorities on the subject are convinced that no other presently available therapy offers comparable promise.

At present in New York City, rapidly expanding Methadone Maintenance Treatment Programs (MMTP) are servicing 34,000 patients.⁵ Of these, 6,400 are presently either under direct management at the Beth Israel Medical Center and Bernstein Institute or under supervision at other centers. Other areas of the country are now beginning to utilize this mode of therapy. In Massachusetts, enrollment in MMTP is only 900,¹² but it can be assumed that the development of treatment programs will follow changes in the distribution pattern of addiction. In addition, there are an unknown number of addicts who take the drug illicitly.

The Methadone Maintenance Treatment Program usu-

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ally involves an induction period of six to seven weeks during which medical, psychiatric and social problems are evaluated and incorporated into the total treatment program. During this period tolerance almost invariably develops and the maintenance dose generally becomes fixed at about 100 mg per day. In studies emanating from programs at this institution,^{6,11} it has been shown that tolerance to the autonomic and smooth muscle effects of methadone develops more slowly than tolerance to the sedative effects. At the clinical level this is manifested during the first year of treatment by excessive sweating and constipation. Physicians responsible for following patients in our clinics are aware of methadone's constipating tendency and frequently prescribe laxatives and stool softeners. With time, in chronic maintenance, these problems become infrequent. However, many physicians are not familiar with these "side actions." Moreover, the Medical Letter¹³ warns that even seven years after its introduction, "the possibility remains of long term adverse effects that are still unrecognized, developing."

Two case reports have appeared in the literature^{1,8,9} describing acute intestinal obstruction in drug addicts in which heroin is regarded as the responsible agent. We are presenting five cases in which chronic methadone users, not taking heroin, presented with acute intestinal obstruction indistinguishable on clinical grounds from the classical presentation of the entity.

Case Reports

Case 1 (J.C.): A 24-year-old Chinese male was admitted on December 17, 1973 with a two-week history of constipation, crampy abdominal pains for several days and two days of increasing abdominal distension. There was no vomiting, diarrhea and no previous history of constipation or sur-

gery. The patient was a member of MMTP for six months with a current dose of 60 mg per day.

Examination revealed a markedly distended abdomen, generalized tenderness, no rebound tenderness and absence of bowel sounds. Rectal examination revealed soft stool in the ampulla. An abdominal x-ray study showed air-fluid levels throughout the small bowel with stool throughout the colon (Fig. 1).

The patient was given intravenous fluids, but nothing by mouth. He was treated with both high colonic enemas and Bisacodyl (Dulcolax) suppositories four times per day for three days, followed by oral cathartics.

He improved dramatically after passing large amounts of hard feces. A followup barium enema showed no bowel pathology.

Case 2 (P.W.): A 19-year-old white male presented on March 19, 1973 with a five-hour history of crampy abdominal pain and one episode of vomiting. His bowel movements had been regular and he denied constipation. There had been no previous surgery. He had been a member of MMTP for eight months with a maintenance dose of 80 mg of methadone per day.

Physical examination revealed a flat, non-tender abdomen, no scars, and hypoactive bowel sounds. Hard stool was felt on rectal examination. An abdominal x-ray film showed multiple air-fluid levels in small bowel and colon loaded with stool (Fig. 2).

He was treated initially with nasogastric suction and intravenous fluids. The next day high colonic enemas followed by cathartics were used. The patient improved immediately after passing large quantities of hard stool. He failed to return to the hospital for a barium enema.

Case 3 (J.M.): A 51-year-old Negro female was admitted on December 20,

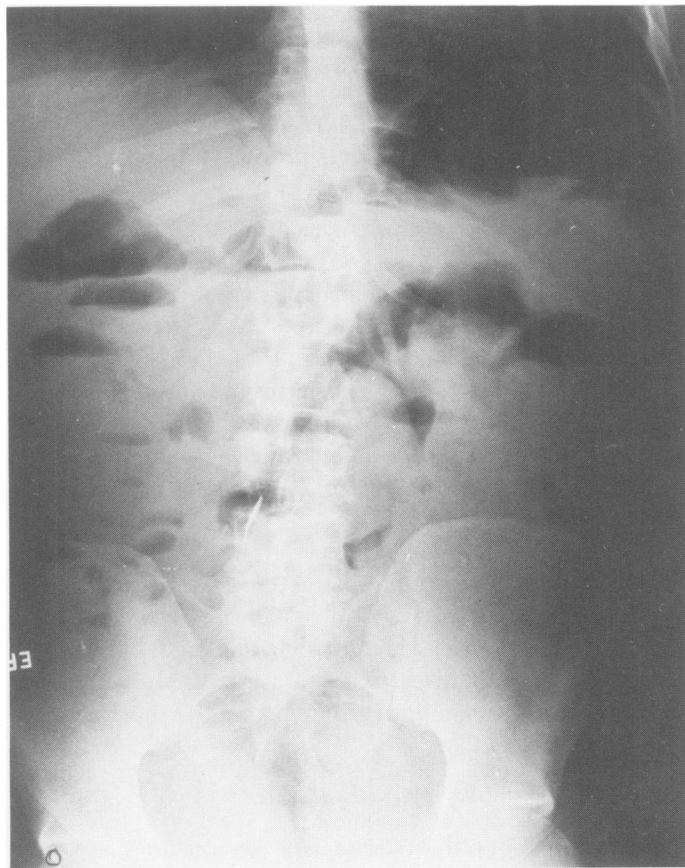


FIG. 1. (J.C.) Upright roentgenogram of the abdomen taken on admission to hospital and showing multiple air-fluid levels.

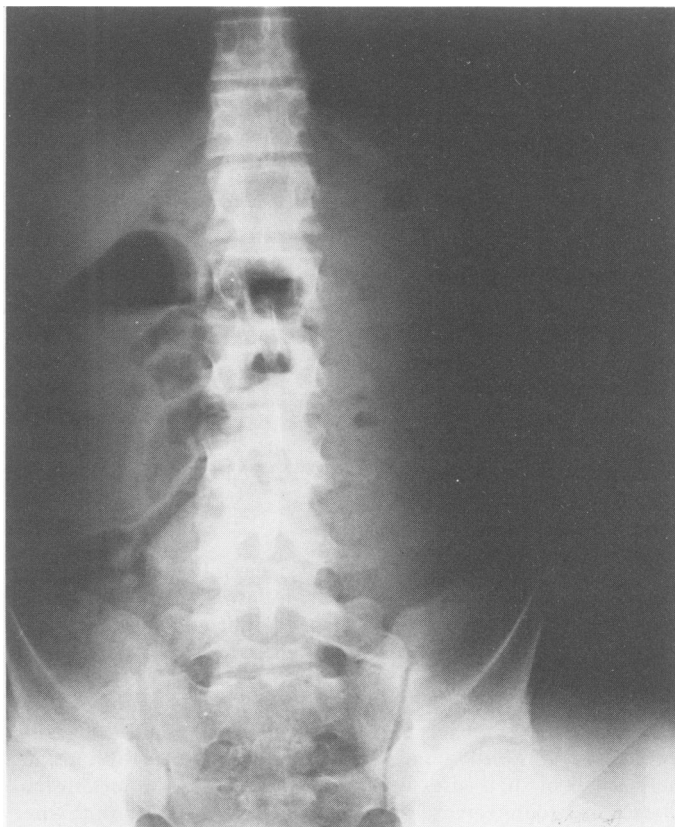


FIG. 2. (P.W.) Upright roentgenogram of the abdomen taken on admission to hospital and showing multiple air-fluid levels.

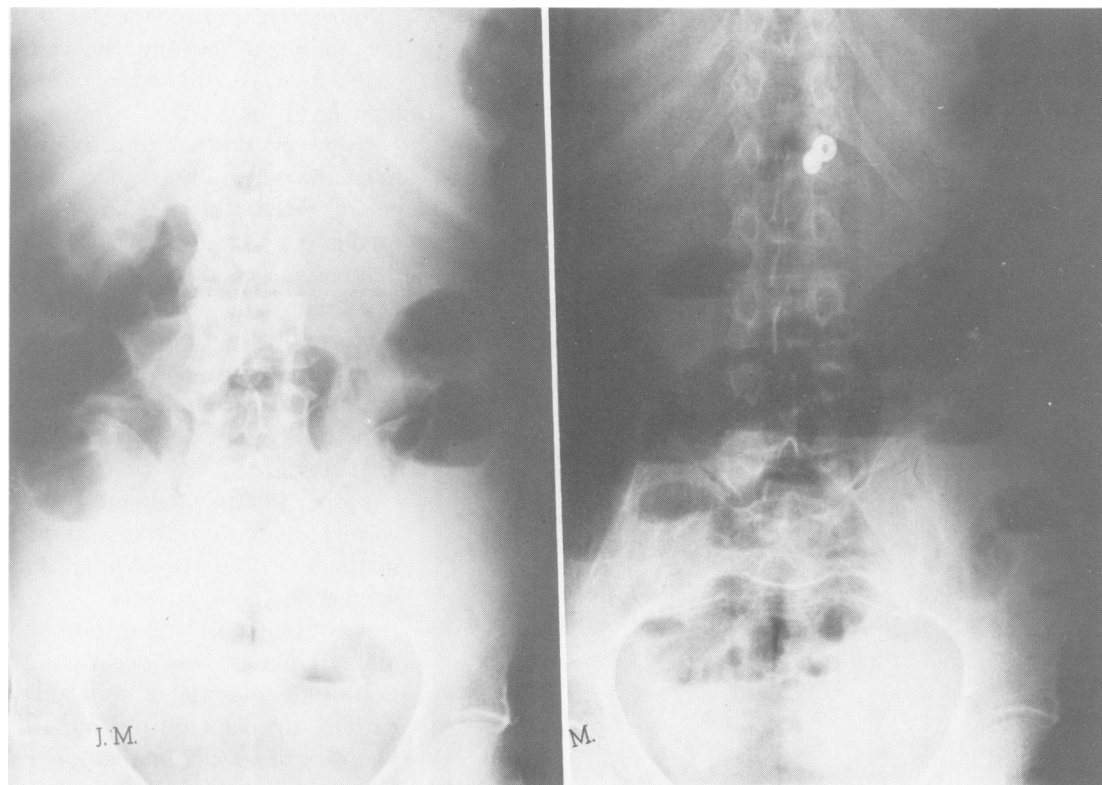
1973 for alcohol detoxification and was being treated with paraldehyde in addition to her methadone. She developed abdominal cramps, distension and had four episodes of diarrhea the following day. Past history included an abdominal operation five years prior to admission (type?). She had attended a MMTP for three years and was maintained on 100 mg of methadone per day. Surgical consultation was sought. Examination revealed a distended, tender abdomen. Bowel sounds were hyperactive with rushes. Rectal examination revealed soft stool in the ampulla. An abdominal x-ray film showed multiple small bowel air-fluid levels (Fig. 3).

The patient was initially treated with intravenous fluids, given nothing by mouth, and decompression started using a Cantor Tube. Symptomatic improvement was noted and the tube was removed. The following day she again developed abdominal cramps and distension. She was treated with high colonic enemas and Bisacodyl suppositories four times per day which resulted in the passage of large amounts of stool. She improved clinically. An upper gastrointestinal series and barium enema performed prior to discharge from the hospital were normal.

Case 4 (H.P.): A 30-year-old white female was admitted on October 20, 1973 with a one-day history of abdominal cramps, distension and obstipation for two days. Nausea was present, but no vomiting. Past history included previous operations for a duodenal ulcer, appendectomy, and ureterolithotomy. She had been a member of MMTP for one year, was maintained on 100 mg of methadone per day, and in addition was known to be addicted to barbiturates.

Examination on admission showed moderate abdominal tenderness, no abdominal guarding, and hypoactive bowel sounds. Rectal examination yielded soft brown stool. Abdominal x-ray studies showed large amounts of stool in the left colon with distended small bowel loops and air-fluid levels (Fig. 4).

FIG. 3. (J.M.) Supine (left) and erect (right) roentgenogram of the abdomen, showing dilated small and large bowel loops and multiple air-fluid levels.



A Cantor Tube was inserted and intravenous fluids started. Good small bowel decompression was achieved. After two days the Cantor Tube was removed and copious bowel movements were obtained by means of high colonic enemas. A barium enema performed after discharge was normal.

Case 5 (W.C.): A 31-year-old Puerto Rican male was admitted to our Emergency Department and subsequently underwent an exploratory laparotomy for a stab wound of the abdomen on August 26, 1973. Operative findings included a laceration of the transverse colon and of the jejunum. The latter was oversewn and a transverse colostomy was performed for the former. The postoperative course included a wound infection which resolved satisfactorily, and the patient was discharged on the 21st postoperative day with the colostomy functioning well. Past history included a thoracotomy, also for a stab wound. The patient was a member of MMTP, taking 100 mg methadone daily and had been in the program for 3½ years.

Four days following the discharge he developed crampy abdominal pain, nausea and the colostomy ceased to function.

On examination, the abdomen was distended, diffusely tender and bowel sounds were hypoactive. The colostomy was not passing gas or fluid. A Cantor Tube was passed per os, a rectal tube placed through the colostomy, and intravenous fluids started. The patient began passing hard stool spontaneously via the colostomy with resolution of the symptoms. He underwent a colostomy closure and was discharged after having a barium enema which showed no pathology.

Discussion

Methadone hydrochloride is a long-acting synthetic narcotic available for oral use. The analgesic effects are similar to those of morphine. Its effectiveness against heroin addiction results from its ability to block the euphoric effects of heroin and cravings for the opiate. The "highs" and the

"sicks" of heroin abuse are eliminated. As a result of these methadone maintenance programs, our addict patient population has been shown to be capable of leading active and productive lives, with a significant percentage being gainfully employed and with crime involvement substantially reduced. Full cooperation is required for a patient to remain in the treatment program and the successful retention rate for 1972 was 76%.

Methadone and other morphine-like drugs have well-established effects on the gastrointestinal tract.^{2,10,14} "Methadone causes relaxation of isolated intestine and inhibits the spasmogenic effect of acetyl choline and histamine on such preparations. However, in the intact, unanesthetized animal, methadone, like morphine, increases intestinal tone, diminishes the amplitude of contractions and produce a marked decrease in the propulsive activity of the intestine."¹⁰ The resultant slower passage of the intestinal contents leads to an increased absorption of water and hence, hardened or inspissated feces. Therefore, on pharmacological grounds, it is reasonable to assume that chronic methadone usage can give rise to fecal impaction. It can also be assumed that, acting in a precipitating and aggravating capacity, the condition may progress, in extreme cases, to acute intestinal obstruction. This syndrome may be much more common than its absence from the literature indicates. In 1973, we, at Beth Israel Medical Center in New York City, admitted five such patients to the

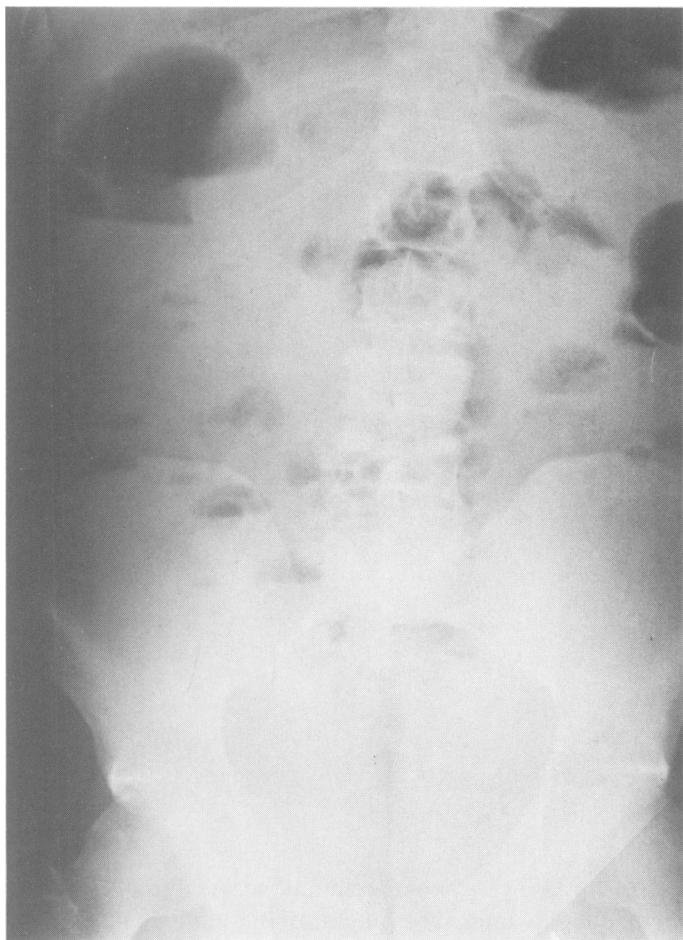


FIG. 4. (H.P.) Upright roentgenogram of the abdomen taken on admission to hospital and showing multiple air-fluid levels.

surgical service. This represented 4% of the methadone users admitted to the service for a variety of other surgical problems.

Symptoms and clinical findings in these patients may be indistinguishable from those of other patients seen with intestinal obstruction. Uniformly, they give a history of colicky abdominal pain, increasing abdominal distension and obstipation; occasionally they admit to previous constipation and in one instance the diarrheal pattern sometimes found with fecal impaction developed (Case #3).

On examination they may appear in great distress. Abdominal distension is a prominent feature and usually some tenderness is found. Although not occurring in the group reported here, a patient who has not received his daily methadone dose because of vomiting may display withdrawal manifestations, and these may further confuse the clinical picture. We have seen "rigidity" of the abdominal musculature and very marked abdominal tenderness in other methadone maintenance patients where such findings were part of the "withdrawal syndrome." Rectal examination often reveals soft stool in the rectal ampulla.

In our series, four of the five patients had x-ray studies of the abdomen showing the classical pattern of intestinal obstruction, i.e., dilated loops of small bowel containing air-fluid levels.

However, the key to arriving at the proper diagnosis is the radiological observance of much fecal material in the colon. When this is paired with the clinical history of methadone maintenance, it should lead to the correct diagnosis. A cautionary note is in order lest the methadone effect represents only an aggravating factor which may mask some other pathological process causing mechanical obstruction. Moreover, as in all instances of intestinal obstruction, the clinician has a responsibility to think of and periodically re-evaluate the patient in terms of bowel strangulation.

Proper treatment should begin with consideration of the correct diagnosis. Awareness of the syndrome in chronic methadone users is essential and may avoid unnecessary surgery in these patients.

A comprehensive and thorough history and physical examination must be undertaken. Any abnormalities in hydration or any electrolyte imbalance should be corrected. The patients are kept nil per mouth and fed intravenously. If vomiting and abdominal distension are marked, nasogastric drainage must be instituted. Vital signs must be closely monitored and important clinical and laboratory determinations made, such as temperature, leukocyte count, blood electrolytes, etc. In the early stages, re-assessment of the physical findings in the abdomen and other pertinent clinical determination should be pursued serially at appropriate intervals. Once the patient's general condition has stabilized and the possibility of bowel strangulation eliminated, colonic enemas at four to six hour intervals may be commenced. Bisacodyl suppositories may also be used. Only when the enemas begin to yield stool and there is clinical improvement, may oral cathartics be used. During this period of treatment the patient must receive his maintenance dose of methadone which is given parenterally.

The response to this mode of therapy is prompt and quite dramatic. As soon as the patient has passed stool, his condition improves rapidly.

Once the acute problem has been resolved, we suggest that all patients be adequately investigated, preferably prior to their discharge from the hospital. Studies should include sigmoidoscopy, a barium enema, an upper gastrointestinal series and small bowel series. Some of these patients are unreliable and others, once their symptoms are relieved, will not take time out for the indicated procedures after being sent home, hence the necessity for the full investigation while still in the hospital.

As methadone maintenance therapy becomes more widely used, and since methadone maintenance may be a lifetime program, we believe that the problem of acute in-

testinal obstruction secondary to the drug's use will be seen more frequently. We suspect that already some of these individuals may have been operated upon unnecessarily.

Addendum

Since submitting this paper for publication we have become aware of two patients with this syndrome at other institutions who were subjected to laparotomy at which no obstructing lesion was discovered.

References

1. Butterfield, W. C.: Surgical Complications of Narcotic Addiction. *Surg. Gynecol. Obstet.*, 134:237, 1972.
2. Daniel, E. E., Sutherland, W. H. and Bogoch, A.: Effects of Morphine and Other Drugs on Motility of the Terminal Ileum. *Gastroenterology*, 36:510, 1959.
3. Dole, V. P.: Methadone Maintenance Treatment for 25,000 Heroin Addicts. *JAMA*, 215:1131, 1971.
4. Dole, V. P. and Nyswander, M. E.: A Medical Treatment for Diacetylmorphine (Heroin) Addiction. *JAMA*, 193:646, 1965.
5. Dole, V. P. and Nyswander, M. E.: Rehabilitation of Patients on Methadone Programs. 5th National Conference on Methadone Treatment, March, 1973.
6. Dole, V. P., Nyswander, M. E. and Kreek, M. J.: Narcotic Blockade. *Arch. Intern. Med.*, 118:304, 1966.
7. Dole, V. P., Nyswander, M. E. and Warner, A.: Successful Treatment of 750 Criminal Addicts. *JAMA*, 206:2708, 1968.
8. Eiseman, B., Lam, R. C. and Rush, B.: Surgery on the Narcotic Addict. *Ann. Surg.*, 159:748, 1964.
9. Fetterman, L. E.: Colonic Fecal Impaction in a Young Drug Addict. *JAMA*, 202:1056, 1967.
10. Goodman, L. S. and Gilman, A.: *The Pharmacological Basis of Therapeutics*, 4th ed. New York, Macmillan, 262, 1970.
11. Kreek, M. J.: Medical Safety and Side Effects of Methadone in Tolerant Individuals. *JAMA*, 223:665, 1973.
12. Massachusetts Department of Public Health: Massachusetts Methadone Maintenance Programs. *N. Engl. J. Med.*, 289:1422, 1973.
13. *The Medical Letter on Drugs and Therapeutics*, 14:14, 1973.
14. *The Medical Letter on Drugs and Therapeutics*, 11:97, 1969.
15. U.S. Department of Justice, Bureau of Narcotics and Dangerous Drugs: Estimating Number of Narcotic Addicts, (October, 1971).